CLAIMS

1. A differential apparatus for distributing a rotational driving force from a transmission output shaft to a first driving wheel and a second driving wheel comprising:

a first driving shaft connected to the first driving wheel;

a second driving shaft connected to the second driving wheel;

a driven gear disposed on the first driving shaft; and

a driving gear which is positioned near the transmission output shaft to be meshed with the driven gear; wherein

adjacent tooth surfaces of the driving gear are formed to have different pressure angles from each other, and

a differential limiting force is generated by a meshing reaction force which is varied depending on a meshing direction of the driving gear.

2. The differential apparatus according to claim 1, comprising:

a differential case connected to the transmission output shaft;

a first driving gear which is housed in the differential case to be meshed with a first driven gear disposed on the first driving shaft;

a second driving gear which is housed in the differential case to be meshed with a second driven gear disposed on the second driving shaft; and

an intermediate gear which is integrally disposed on the second driving gear to be meshed with the first driving gear.

3. The differential apparatus according to claim 1, comprising:

a carrier which is connected to the second driving shaft to rotatably support the driving gear; and

an intermediate gear which is integrally disposed on the driving gear to be meshed with an output gear disposed on the transmission output shaft.

4. The differential apparatus according to claim 1, comprising;

a differential case which houses therein the driving gear, and is connected to the transmission output shaft; wherein

the driving gear is meshed with both the first driven gear connected to the first driving shaft, and the second driven gear connected to the second driving shaft.

5. The differential apparatus according to any one of claims 1 to 4, wherein

a tooth surface of the driving gear for transmitting a rotational driving force in a drive mode is formed to have a larger pressure angle than that of a tooth surface to which the rotational driving force is transmitted during a coast mode.

6. The differential apparatus according to claim 2 or 3, wherein

the driving gear is formed in a cylindrical shape, and

a differential limiting force is generated by a radial meshing reaction force which is applied to the driving gear.

7. The differential apparatus according to claim 6, wherein

the differential limiting force is a frictional force generated in the driving gear and a housing bore of the differential case housing the driving gear.

8. The differential apparatus according to claim 6, wherein

the differential limiting force is a frictional force generated in the driving gear and a support shaft of the carrier supporting the driving gear.

9. The differential apparatus according to claim 4, wherein

the driving gear, the first driven gear, and the second driven gear are formed as bevel gears, and

a differential limiting force is generated by a meshing reaction force applied to the first and the second driven gears in a thrust direction.

10. The differential apparatus according to claim 4 or 9, wherein

a friction generating member is disposed between the first driven gear and the differential case, and

a friction reducing member is disposed between the second driven gear and the differential case.

11. The differential apparatus according to claim 4 or 9, wherein

a first friction generating member is disposed between the first driven

gear and the differential case, and

a second friction generating member is disposed between the second driven gear and the differential case, the second friction generating member generating a smaller friction than that of the first friction generating member.

12. The differential apparatus according to claim 10, wherein

a larger meshing reaction force is applied to the first driven gear in a thrust direction in a drive mode, than that during a coast mode.

13. The differential apparatus according to claim 11, wherein

a larger meshing reaction force is applied to the first driven gear in a thrust direction in a drive mode, than that during a coast mode.

14. The differential apparatus according to any one of claim 10, wherein the friction generating member is a friction clutch.

15. The differential apparatus according to any one of claim 11, wherein the friction generating member is a friction clutch.

16. The differential apparatus according to any one of claim 12, wherein the friction generating member is a friction clutch.

17. The differential apparatus according to any one of claim 10, wherein the friction generating member is a tapered ring.

18. The differential apparatus according to any one of claim 11, wherein the friction generating member is a tapered ring.

19. The differential apparatus according to any one of claim 12, wherein the friction generating member is a tapered ring.